

IN THE DRAWINGS

Formal drawings including FIG. 1, FIG. 2, FIG. 3, FIG. 4, FIG. 5, FIG. 6, FIG. 7, FIG. 8, FIG. 9, FIG. 10, and FIG. 11 on sheets 1-7 are included with this response. Sheets 1-7 are identified as "REPLACEMENT SHEET". No amendments have been made to these formal drawings relative to the informal drawings as originally filed in the application. No new matter is included with the submission of these formal drawings.

REMARKS

Claims 1, 12, 16, and 20 are amended, no claims are canceled, and no claims are added; as a result, claims 1-23 are now pending in this application.

No new matter has been added through the amendments to claims 1, 12, 16, and 20. Support for the amendments to claims 1 and 20 may be found for example, but not limited to, the specification on page 3 at lines 5-12. Support for the amendments to claim 12 may be found for example, but not limited to, the specification on page 4 at lines 7-14. Support for the amendments to claim 20 may be found for example, but not limited to, the specification on page 7 at lines 9-10.

In the Drawings

Figures 5 and 10 were objected to as being hand drawn, compact, and cluttered. As noted above, formal drawings, including formal drawings including FIG. 5 and FIG. 10, are included with this response. Applicant submits the objection to the drawings has been overcome by the submission of the formal drawings, and so respectfully requests withdrawal of the objection to the drawings.

In the Specification

The specification has been amended merely to correct minor and obvious typographical errors. No new matter has been added through the amendments to the specification.

Specifically, the phrase "input port 116" has been amended to read "input port 110" on page 4 at line 3 of the specification. Support for this amendment may be found for example, but not limited to, the specification on page 3 at line 8 and at line 17.

In addition, the phrase "gate 210, and drain/source 206" has been amended to read "gate 212, and the drain/source 208" on page 4 at lines 28-29. Support for this amendment may be found for example, but not limited to, the specification on page 3, line 27 through page 4, line 6, and in FIG. 3 as originally filed.

§102 Rejection of the Claims

Claims 1-3 and 6

Claims 1-3 and 6 were rejected under 35 U.S.C. § 102(b) as being anticipated by Voshell (U.S. 6,285,215).

Claims 1-3 and 6 are not anticipated by Voshell because Voshell fails to disclose all of the claimed subject matter included in claims 1-3 and 6. For example, claims 1 as now amended recites,

a first circuit coupled to an input port of the transmitter;
and
a second circuit including a second circuit input port
coupled to an output port of the first circuit, the second circuit
including a second circuit output port coupled to an output port of
the transmitter

In contrast, Voshell discloses a different circuit structure from the claimed subject matter recited in claim 1. For example, Voshell discloses,

Turning to FIG. 2, the driver 28 is comprised of a first
signal path 42 servicing an output node 44. The driver 28 has a
second signal path 46 which also services the output node 44.
Thus, the output node 44 is common to both the first signal path 42
and the second signal path 46.¹

Thus, Voshell discloses a first signal path and a second signal path connected to a common output node, but fails to disclose for example, "a second circuit including **a second circuit input port coupled to an output port of the first circuit**, the second circuit including a second circuit output port coupled to an output port of the transmitter," as recited in claim 1. Because Voshell fails to disclose all of the claimed subject matter included in claim 1, claim 1 is not anticipated by Voshell.

Claims 2-3 and 6 depend from claim 1, and so include all of the claimed subject matter included in claim 1. For at least the reasons stated above with respect to claim 1, claims 2-3 and 6 are not anticipated by Voshell because Voshell fails to disclose all of the claimed subject matter included in claims 2-3 and 6.

¹ See Voshell at column 3, lines 35-39.

Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of claims 1-3 and 6.

Claims 12-19

Claims 12-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Arcoleo et al. (U.S. 5,864,506).

Claims 12-19 are not anticipated by Arcoleo et al. because Arcoleo et al. fails to disclose all of the claimed subject matter included in claims 12-19. For example, claim 12 as now amended recites,

wherein the first circuit is sized with respect to the second circuit such that for a pulse signal applied to an input port of the first circuit, the transmitter generates an output signal having a rise-time and a fall-time that are substantially equal at the output port

In contrast, Arcoleo et al. discloses, "An output buffer circuit of a semiconductor memory device can produce multiple output buffer drive strengths,"² but fails to disclose, "wherein the first circuit is sized with respect to the second circuit such that for a pulse signal applied to an input port of the first circuit, the transmitter generates an output signal having a rise-time and a fall-time that are substantially equal at the output port," as recited in amended claim 12. Therefore, Arcoleo et al. fails to disclose all of the claimed subject matter recited in claim 12. Because Arcoleo et al. fails to disclose all of the claimed subject matter included in claim 12, claim 12 is not anticipated by Arcoleo et al.

In another example of claimed subject matter not disclosed by Arcoleo et al., claim 16 as now amended recites,

a second circuit to couple the first circuit to an output port of the transmitter, the second circuit coupled to an equalization control circuit, wherein the equalization control circuit provides de-emphasis.

The Office Action on page 5 relies on reference number 611 in Arcoleo et al. as disclosing "an equalization control circuit." While Applicant does not admit that reference

² See Arcoleo et al. Abstract.

number 611, referred to in Arcoleo et al. as a "control signal generator"³ discloses an equalization control circuit as recited in claim 16, there is no disclosure in Arcoleo et al. of "wherein the equalization control circuit provides de-emphasis," as recited in claim 16. Therefore, Arcoleo et al. fails to disclose all of the claimed subject matter recited in claim 16. Because Arcoleo et al. fails to disclose all of the claimed subject matter recited in claim 16, claim 16 is not anticipated by Arcoleo et al.

Claims 13-15 depend from claim 12, and so include all of the claimed subject matter recited in claim 12. Claims 17-19 depend from claim 16, and so include all of the claimed subject matter recited in claim 16. For at least the reasons stated above with respect to claims 12 and 16, claims 13-15 and 17-19 are not anticipated by Arcoleo et al. because Arcoleo et al. fails to disclose all of the claimed subject matter included in each of claims 13-15 and 17-19.

Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of claims 12-19.

§103 Rejection of the Claims

Claims 4-5 and 7-10

Claims 4-5 and 7-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Voshell (U.S. 6,285,215) in view of Arcoleo et al. (U.S. 5,864,506).

Claims 4-5 and 7-10 depend from claim 1, and so includes all of the claimed subject matter recited in claim 1. Applicant believes they have established that Voshell fails to disclose or suggest all of the claimed subject matter recited in claim 1, and so also fails to disclose or suggest all of the claimed subject matter included in claims 4-5 and 7-10. Applicant's representatives fails to find in, and the Office Action fails to point out in Arcoleo et al. the claimed subject matter included in claims 4-5 and 7-10 and missing from Voshell. For example, there is no disclosure or suggestion in Arcoleo et al. and as recited in claim 1 of,

a second circuit including a second circuit input port coupled to an output port of the first circuit, the second circuit including a second circuit output port coupled to an output port of the transmitter,
wherein the first circuit is sized with respect to the second circuit such that for a pulse signal applied to the input port, the

³ See e.g. Arcoleo et al. at column 9, lines 29-30.

transmitter generates an output signal having a rise-time and a fall-time that are substantially equal at the output port.
(Emphasis added).

Thus, the proposed combination of Voshell and Arcoleo et al. fails to disclose or suggest all of the claimed subject matter included in claim 1, and thus fails to disclose or suggest all of the claimed subject matter included in claims 4-5 and 7-10.

In addition, dependent claims 4-5 and 7-10 include additional claimed subject matter not disclosed or suggested by the proposed combination of Voshell and Arcoleo et al. For example, claim 4 recites, "wherein the n-type metal-oxide semiconductor field-effect transistor is larger than the p-type metal-oxide semiconductor field-effect transistor." In addition, claim 5 recites, "wherein the n-type metal-oxide semiconductor field-effect transistor is between about two and about three times larger than the p-type metal-oxide semiconductor field-effect transistor."

In contrast, the Office Action appears to rely on Arcoleo et al.⁴ at column 8, lines 20-26 as supplying this claimed subject matter recited in claims 4 and 5. However and in contrast, the cited portion of Arcoleo et al. states,

In particular, in the output buffer circuit of FIG. 5B, the drive strengths are determined by the physical characteristics (e.g., length, width, capacitance, channel resistance) of the transistors 501a, 501b, 502a and 502b. Thus, by appropriately selecting the physical characteristics of the transistors 501a, 501b, 502a and 502b, the possible drive strength magnitudes can be predictably established.⁵

Thus, the cited portion of Arcoleo et al. refers to the physical characteristics of transistors 501a, 501b, 502a, and 502b. However, there is no disclosure in this, or any other portion of Arcoleo et al. of "wherein the n-type metal-oxide semiconductor field-effect transistor is larger than the p-type metal-oxide semiconductor field-effect transistor," as recited in claim 4, or of "wherein the n-type metal-oxide semiconductor field-effect transistor is between about two and

⁴ The Office Action on page 6 states, "Regarding claim 5, Voshell fails to teach the n-type MOSFET is between about two and about three times larger than the p-type MOSFET (col. 8 lines 20-26)." While applicant agrees that Voshell fails to disclose or suggest the claimed subject matter as recited in claim 5, the reference to column 8 lines 20-26 is assumed to be in reference to Arcoleo et al. However, if this assumption is incorrect, Applicant respectfully requests clarification, and reserves the right to respond to any clarification provided.

⁵ See Arcoleo et al. at column 8, lines 19-26.

about three times larger than the p-type metal-oxide semiconductor field-effect transistor," as recited in claim 5.

Therefore, the proposed combination of Voshell and Arcoleo et al. fails to disclose or suggest the additional subject matter recited in claim 4 and in claim 5. For at least these additional reasons, claims 4 and 5 are not obvious, and are patentable, over the proposed combination of Voshell and Arcoleo et al.

Because the proposed combination of Voshell and Arcoleo et al. fails to disclose or suggests all of the claimed subject matter included in claims 4-5 and 7-10, claims 4-5 and 7-10 are not obvious, and are patentable, over the proposed combination of Voshell and Arcoleo et al.

The Office Action fails to provide a proper basis for forming the proposed combination of Voshell and Arcoleo et al., and so fails to state a prima facie case of obviousness with respect to claims 4-5 and 7-10.

Applicable law - The Office Action must provide specific, objective evidence of record for a finding of a suggestion or motivation to combine reference teachings and must explain the reasoning by which the evidence is deemed to support such a finding. *In re Sang Su Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002). Further yet, the fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); MPEP § 2143.01. Finally, the Examiner must avoid hindsight. *In re Bond* at 834.

In an attempt to meet these requirements, the Office Action on page 6 states,

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the driver/transmitter circuit of Voshell with the transistor sizing taught by Arcoleo for improving signal quality and impedance matching.

However, the Office Action fails to point to any portion of either of the disclosures of Voshell or Arcoleo et al. to support these statements. Thus, the Office Action fails to show how the prior arts suggest the desirability of combination of Voshell and Arcoleo et al.

In fact, Applicant submits that the disclosure of the documents suggest that the combination would be undesirable. For example, Voshell discloses programmable devices, such

as programmable device 68, for removing and enabling transistors in the output stages of the circuits in Voshell.⁶ In contrast, the disclosure in Arcoleo et al. states,⁷

While output buffers having selectable drive strength have previously been used with other devices, **such as programmable logic devices, selectable drive strength output buffers** that allow a user to adjust the output buffer drive strength have not heretofore been used with semiconductor memory devices. There are several reasons for this. (Emphasis added).

Thus, the disclosure in Arcoleo et al. discourages the use of the very circuit, that is, the selectable drive strength output buffers as disclosed in Voshell. Hence, one of ordinary skill in the art would not have a suggestion or motivation to combine Voshell and Arcoleo et al. Therefore, the requirements for forming the proposed combination of Voshell and Arcoleo et al. are not met, and so the Office Action fails to state a *prima facie* case of obviousness with respect to claims 4-5 and 7-10.

For at least the reasons stated above, Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of claims 4-5 and 7-10.

Claim 11

Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Voshell (U.S. 6,285,215) in view of Ang et al. (U.S. 6,420,913).

Claim 11 depends from claim 1, and so includes all of the claimed subject matter recited in claim 1. Applicant believes they have established that Voshell fails to disclose or suggest all of the claimed subject matter included in claim 1, and so also fails to disclose or suggest all of the claimed subject matter included in claim 11. Applicant's representatives fails to find in, and the Office Action fails to point out in Ang et al. the claimed subject matter included in claim 11 and missing from Voshell. Thus, the proposed combination of Voshell and Ang et al. fails to disclose or suggest all of the claimed subject matter included in claim 11.

⁶ See e.g. Voshell at column 4, lines 2-12.

⁷ See Arcoleo et al. at column 3, lines 7-12.

Because the Office Action fails to point out how the proposed combination of Voshell and Ang et al. discloses or suggests all of the claimed subject matter included in claim 11, claim 11 is not obvious, and thus is patentable over the proposed combination of Voshell and Ang et al.

Further, the Office Action fails to state a *prima facie* case of obviousness with respect to claim 11 because the Office Action fails to provide any motivation or suggestion to form the proposed combination of Voshell and Ang et al. in rejecting claim 11.

Because claim 11 is not obvious in view of the proposed combination of Voshell and Ang et al., and because the Office Action fails to provide a proper motivation or suggestion for forming the proposed combination of Voshell and Ang et al., Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of claim 11.

Claims 20-22

Claims 20-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Voshell (U.S. 6,285,215) in view of Martin et al. (U.S. 6,894,536).

Claim 20 as now amended recites,

a second circuit including a second circuit input port coupled to an output port of the first circuit, the second circuit including a second circuit output port coupled to an output port of the transmitter, **wherein the first circuit is sized with respect to the second circuit such that for a pulse signal applied to the input port, the transmitter generates an output signal having a rise-time and a fall-time that are substantially equal at the output port.**
(Emphasis added).

For reasons analogous to those stated above with respect to claim 1, Applicant believes they have established that Voshell fails to disclose or suggest this claimed subject matter as recited in claim 20. Applicant's representatives fails to find in Martin et al. this claimed subject matter recited in claim 20 and missing from Voshell. Thus, the proposed combination of Voshell and Martin et al. fails to disclose or suggest all of the claimed subject matter recited in claim 20.

Claims 21-22 depend from claim 20, and so include all of the claimed subject matter recited in claim 20. Therefore, the proposed combination of Voshell and Martin et al. fails to disclose or suggest all of the claimed subject matter included in claims 21-22.

Because the proposed combination of Voshell and Martin et al. fails to disclose or suggests all of the claimed subject matter included in claims 20-22, claims 20-22 are not obvious, and are patentable, over the proposed combination of Voshell and Martin et al.

The Office Action fails to provide a proper basis for forming the proposed combination of Voshell and Martin et al., and so fails to state a prima facie case of obviousness with respect to claims 20-22.

In an attempt to meet the requirements for forming the proposed combination of Voshell and Martin et al. the Office Action on page 8 states,

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the driver/transmitter of Voshell in the processor communication line taught by Martin for better impedance matching between the transmitter and receiver.

However, the Office Action fails to point out how the driver/transmitter of Voshell would provide "better impedance matching between the transmitter and receiver" of Martin et al., or that any impedance matching between the transmitter and receiver of Martin et al. requires any improvement. Thus, the Office Action fails to show how one of ordinary skill in the art at the time of invention would be motivated to form the proposed combination of Voshell with Martin et al. Without such support, the Office Action fails to meet the requirements for forming the proposed combination of Voshell and Martin et al., and appears to be merely attempting to reconstruct the claimed subject matter of claims 20-22 using impermissible hindsight. By failing to meet the requirements for forming the proposed combination of Voshell and Martin et al., the Office Action fails to state a *prima facie* case of obviousness with respect to claims 20-22.

For at least the reasons stated above, Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of claims 20-22.

Claim 23

Claim 23 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Voshell (U.S. 6,285,215) in view of Martin et al. (U.S. 6,894,536) and further in view of Arcoleo et al. (U.S. 5,864,506).

Claim 23 is not obvious in view of the proposed combination of Voshell, Martin et al., and Arcoleo et al. because the proposed combination fails to disclose or suggest all of the claimed subject matter included in claim 23. For example, claim 23 depends from claim 20, and so includes all of the claimed subject matter recited in claim 20. Applicant believes they have established that the proposed combination of Voshell and Martin et al. fails to disclose or suggest all of the claimed subject matter included in claim 20, and so fails to disclose all of the claimed subject matter included in claim 23.

Applicant's representatives fail to find in Arcoleo et al. the claimed subject matter included in claim 23 and missing from the proposed combination of Voshell and Martin et al. Thus, the proposed combination of Voshell, Martin et al., and Arcoleo et al. also fails to disclose or suggest all of the claimed subject matter included in claim 23.

Because the proposed combination of Voshell, Martin et al., and Arcoleo et al. fails to disclose or suggests all of the claimed subject matter included in claim 23, claim 23 is not obvious, and is patentable, over the proposed combination of Voshell, Martin et al., and Arcoleo et al.

The Office Action fails to provide a proper basis for forming the proposed combination of Voshell, Martin et al., and Arcoleo et al., and so fails to state a prima facie case of obviousness with respect to claim 23.

Applicant believes, for at least the reasons stated above with respect to claims 4-5, 7-10, and 20-23, that the Office Action fails to state a *prima facie* case of obviousness with respect to claim 23 because the Office Action fails to meet the requirements for forming the proposed combination of Voshell, Martin et al., and Arcoleo et al. By failing to meet these requirements, the Office Action fails to state a *prima facie* case of obviousness with respect to claim 23.

For at least the reasons stated above, Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of claim 23.

Reservation of Rights

Applicant does not admit that references cited under 35 U.S.C. §§ 102(a), 102(e), 103/102(a), or 103/102(e) are prior art, and reserves the right to swear behind them at a later date. Arguments presented to distinguish such references should not be construed as admissions that the references are prior art.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney ((612) 371-2132) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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